

Stormwater Language:

Regarding stormwater, most businesses within the Lower Willamette River industrial corridor are under a 1200Z permit for management of their stormwater releases. In addition, treatment will be required for some permit holders to meet the Phase II stormwater requirements. Because of completed and ongoing efforts to control stormwater discharges, this FS assumes that contaminant discharges will be controlled. As a result, stormwater is not discussed in Section 1.2.3.

Groundwater Language:

NW Natural: Please review highlighted list of groundwater contaminants.

NW Natural/Gasco – Groundwater plumes associated with historical MGP waste are known to be discharging to the river. Contaminants detected in groundwater include PAHs, SVOCs, VOCs (e.g., benzene, ethylbenzene, toluene and xylene – BTEX), gasoline-range hydrocarbons, diesel-range hydrocarbons, residual-range hydrocarbons, cyanide, sulfide, sulfate and carbon disulfide, ammonia, and metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc). Gasoline-range hydrocarbons, diesel-range hydrocarbons, residual-range hydrocarbons and total petroleum hydrocarbon fractions are being added to the groundwater monitoring program. A hydraulic control pump and treatment system has been constructed at the riverbank and is currently being tested.

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Siltronic: Need to confirm metals detected in groundwater above SLVs. Total concentrations of metals detected at least once above SLVs in groundwater include arsenic, barium, beryllium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, thallium, vanadium, and zinc.

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Rhone Poulenc – Known releases of organochlorine insecticides and herbicides, including PCP, 2,4-DP, Bromoxynil, 4(2,4-dichloropenoxy)butyric acid (2,4-DB), 2-methyl-4-chlorophenoxyacetic (MCPA), methylchlorophenoxypropionic acid (MCPB), 4-(4-chloro-2-methylphenoxy)butanoic acid (MCPB), 2,4,5-trichlorophenoxyacetic acid [2,4,5-T], 2,4-dichlorophenoxyacetic acid (2,4-D), DDT, Endrin, Heptachlor, sodium chlorate, sodium arsenate, 2,4,5-TP (Silvex), aldrin, dieldrin, chlordanes, and dichlorprop have occurred at the site. Contaminants detected in groundwater include VOCs (e.g., dichlorobenzene isomers, chlorobenzene, benzene, chloroform, trichloroethene, dichloroethene, and vinyl chloride), insecticides (e.g., DDT, dieldrin), herbicides (e.g., Silvex, 2,4-D), several metals (e.g., arsenic), and dioxins/furans.

Spatial and temporal uncertainty present in the groundwater dataset for the site results in uncertainty in defining the full extent of the groundwater plume. DEQ determined that there is clear evidence that source control is needed to address direct discharge to the River of the following contaminants in groundwater: VOCs (e.g., dichlorobenzene isomers, and

chlorobenzene), and herbicides (e.g., Silvex and dichlorprop). The plume is uncontrolled. (DEQ 2013)

The City Outfall 22B groundwater infiltration pathway is currently being addressed through implementation of the Outfall 22B Expanded IRAM. The Outfall 22B Expanded IRAM is being implemented to address exceedances of Joint Source Control Screening Level Values for the following in dry weather flow: SVOCs (2,4,6-trichlorophenol, 2,4-dichlorophenol, 2-methylphenol, pentachlorophenol, and naphthalene), Insecticides (aldrin, alpha-chlordane, dieldrin, gamma-chlorodane, heptachlor epoxide, hexachlorobenzene, DDD, DDE, and DDT), Dioxin/furans (2,3,7,8-TCDD) and metals (aluminum, boron, molybdenum, thallium, arsenic, barium, iron, manganese). (DEQ 2013)

~~PCP, 2,4 DP, Bromoxynil, 2,4 DB, MCPA, MCPP, MCPB, 2,4 T, 2,4 D, DDT, Endrin, Heptachlor, sodium chlorate, sodium arsenate, 2,4,5 TP, 2,4,5 T, aldrin, dieldrin, and chlordanes.~~

(DEQ 2013). Letter to Stuart Dearden from DEQ. Re: DEQ Review of Rhone Poulenc Source Control Evaluation and Next Step for Source Control, RP-Portland Site, ESCI 155. October 9, 2013.

Rhone-Poulenc: Please review and revise below paragraph as necessary:

~~Rhone Poulenc — Known releases of organochlorine insecticides and herbicides, including PCP, 2,4 DP, Bromoxynil, 4(2,4 dichlorophenoxy)butyric acid (2,4 DB), 2-methyl 4-chlorophenoxyacetic (MCPA), methylchlorophenoxypropionic acid (MCPB), 4-(4-chloro-2-methylphenoxy)butanoic acid (MCPB), 2,4,5-trichlorophenoxyacetic acid [2,4,5 T], 2,4-dichlorophenoxyacetic acid (2,4 D), DDT, Endrin, Heptachlor, sodium chlorate, sodium arsenate, 2,4,5 TP (Silvex), aldrin, dieldrin, chlordanes, and dichlorprop have occurred at the site. Contaminants detected in groundwater include VOCs (e.g., dichlorobenzene isomers, chlorobenzene, benzene, chloroform, trichloroethene, dichloroethene, and vinyl chloride), insecticides (e.g., DDT, dieldrin), herbicides (e.g., Silvex, 2,4 D), several metals (e.g., arsenic), and dioxins/furans.~~

Arkema: Please review and revise below paragraph as necessary:

~~Arkema — Contaminants detected in groundwater at the site include, but are not limited to, DDT and its metabolites DDD and DDE (DDX), and VOCs (-MCB, chloroform, PCE, TCE, tetrachloroethene, benzene), perchlorate and hexavalent chromium. The DDX and MCB are —that are— primarily associated with pesticide manufacturing process residue (MPR). Perc, along with perchlorate and hexavalent chromium are associated with the Chlorate Plant area. Investigation of the contaminated groundwater discharges is ongoing. A barrier wall and groundwater pump and treat system was is being constructed to manage the groundwater plumes on the southern end of the property and is currently being tested. Additional source control measures to address groundwater impacts north of the groundwater containment system will be evaluated in the Arkema upland FS.~~

Chevron/Willbridge: Please review and revise below paragraph as necessary:

Chevron and Unocal Willbridge Bulk Terminal – A TPH plume located onsite has discharged to the river. Contaminants include LNAPL, gasoline- range hydrocarbons, diesel- range hydrocarbons, residual-range hydrocarbons, ~~and~~ arsenic and manganese. Nineteen control measures have been implemented at the site between the early 1970s and 2010 to address the potential migration of impacted groundwater to the Willamette River. Saturated petroleum hydrocarbon (SPH) contamination has been detected at various locations across the site. Observations of sheen associated with recent high groundwater conditions has raised concerns regarding the long term adequacy of the LNAPL containment system; additional characterization is in progress, and it is expected that modifications to the LNAPL containment system will be proposed.

Gunderson: Please review and revise below paragraphs as necessary:

Gunderson –There is a chlorinated VOC plume (1,1-DCE, 1,1,1-trichloroethane [1,1,1-TCA], PCE, TCE and vinyl chloride) near the downstream end of the Gunderson property. An air sparge/soil vapor extraction and a pump and treat system were operating for the VOC plume. DEQ approved the shut-down of ~~these pump and treat system systems~~ and a rebound assessment is in progress~~schedule of expanded groundwater monitoring~~.

In addition, there is a PAH groundwater plume located between the Equilon (Shell Terminal) pipeline gasoline release and the Equilon dock at Gunderson. The PAH plume was determined by DEQ to not be discharging to the river. Shell treated a gasoline release from their pipeline on the Gunderson site using an air sparge and vapor recovery system. This system has been shutdown and dismantled. DEQ approved the cleanup and issued a NFA.

Riverbank Language:

Siltronic/BNSF RR Bridge: Please review and revise below paragraphs as necessary:

Siltronic –~~Contamination~~ associated with historical MGP waste is known to be present in the northern portion of the Siltronic riverbank. Riverbank contaminants include PAHs, gasoline- range hydrocarbons, diesel- range hydrocarbons, residual-range hydrocarbons and cyanide.

Commented [mm1]: Looks ok, but see GASCO/Siltronic EE/CA Appendix H.

Burlington Northern and Santa Fe Railroad Bridge – Contamination associated with and pesticide and herbicide releases from Rhone Poulenc and Arkema are known to be present in the river bank below and adjacent to the Burlington Northern and Santa Fe railroad bridge. Riverbank contaminants include, dioxin/furans, metals (aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, selenium, silver, sodium, thallium, vanadium, zinc, Insecticides (DDD, DDE, DDT, aldrin, alpha-BHC, alpha-chlordane, beta-BHC, cis-nonachlor, delta-BHC, dieldrin, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, gamma0BHC, gammachlordane heptachlor, heptachlor epoxide, hexachlorobutadiene, methoxychlor, mirex, oxychlordane, and trans-nonachlor), PCBs, SVOCs (acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene,

benzo(g,h,i)perylene, benzo(k)fluoranthene, benzoic acid, benzyl alcohol, bis (2-ethylhexyl)phthalate, butylbenzylphthalate, chrysene, bibenzo(a,h)anthracene, dimethylphthalate, bi0n-butylphthalate, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene and pyrene). (AMEC 2011)

(AMEC 2011) RI/SCE Report-RP Portland Site. Prepared by AMEC Environmental and Infrastructure Inc. on behalf of StarLink Logistics, Inc., November 19, 2011.

~~Burlington Northern and Santa Fe Railroad Bridge—Contamination associated with and pesticide and herbicide releases from Rhone-Poulenc and Arkema are known to be present in the river bank below and adjacent to the Burlington Northern and Santa Fe railroad bridge. Riverbank contaminants include, PCP, 2,4 DP, Bromoxynil, 2,4 DB, MCPA, MCPP, MCPB, 2,4 T, 2,4 D, DDT, Endrin, Heptachlor, sodium chlorate, sodium arsenate, 2,4,5 TP, 2,4,5 T, aldrin, dieldrin, and chlordanes.~~